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Fragrant plants used as air fresheners in private households

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Direct assembly of multiple linear DNA fragments via homologous recombination, a phenomenon known as in vivo assembly was recently introduced as a technology for transformation of the moss *Physcomitrella patens*[1]. This technology has enable us to establish several sesquiterpenoid-producing lines in this green cell factory[2]. We have demonstrated that we in moss can produce up to 200 mg/L amorphadiene (the precursor for Artemisinin) and that we can achieve a production of 0.21 mg/g dry weight of Artemisinin within just a few days of cultivation[3].
Similarly we have established lines that produce several fragrances of patchoulol[4], santalene[4], bisabolol, α-humulene and valencene at the levels between 0.2 – 1.8 mg/g dry weight. Altogether, this show that the moss is a very good cell factory for the production of terpenoids and in particularly sesquiterpenoids. This has allowed us to establish a fragrant moss line, see more www.orbellamoss.com
Our research also demonstrates that employing the same strategies as for yeast, such as upregulation of HMGR and overexpression of FPPS enhances the overall yield of terpenoids [4].
These proof-of-principle experiments have paved the way for more complex and increasingly flexible approaches for large-scale metabolic engineering in plant biotechnology. First was the successful integration of five active genes for Artemisinin, but the focus is now for truly freshening fragrances for private households.

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